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January — March 1993

Number 1004
Volume 118

The Naturalist

A QUARTERLY JOURNAL OF NATURAL HISTORY FOR THE NORTH OF ENGLAND

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**Breeding activities of Parrot Crossbills *Loxia pytyopsittacus* in
South Yorkshire in 1983 — *Jeff Lunn and John E. Dale***

**Recorder's fourth report on the Aculeate Hymenoptera in
Watsonian Yorkshire and the development of a quality scoring
system — *Michael E. Archer***

Published by the Yorkshire Naturalists' Union

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Readers of *The Naturalist* will have noticed that the number of photographic illustrations has increased in recent years. Good clear photographs, suitably captioned, to accompany articles or as independent features, such as the bird portraits by Arthur Gilpin in recent issues, are always welcome.

To encourage this development, a long-standing member of the YNU, who wishes to remain anonymous, has most generously offered to make a donation, the income from which would finance the publication of a plate or equivalent illustration in future issues whenever possible. The editor, on behalf of the YNU, wishes to record his deep appreciation of this imaginative gesture.

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Institutions and Subscribers £15.00.

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THE LICHEN FLORA OF DERBYSHIRE – SUPPLEMENT 3

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During the ten years since 'Supplement 2' was published (Gilbert 1983) sporadic lichenological activity has produced 53 new vice-county records; this brings the total number of species for V.C. 57 to 493, of which 396 have been seen since 1960. A number of the new records are of pollution sensitive epiphytes, e.g. *Parmelia caperata*, *P. perlata*, *P. revoluta* and *Physcia aipolia* that are spreading through the Midlands due to declining levels of SO₂ air pollution. Other corticolous species have almost certainly survived the industrial period in their present localities but remained undetected until now due to their small size or because they were poorly known, e.g. *Anisomeridion nyssaegenum*, *Chaenotheca stemonea*, *Lecanora piniperda*, *Lecidea hypopta* and *Strangospora moriformis*.

The Millstone Grit moorlands east of Sheffield have been thoroughly surveyed by P. A. Ardron under contract to the Peak District National Park. Though they are less than 10km from the city centre he discovered a rich lichen flora that includes *Cetraria islandica*, *Cladonia caespiticia*, *C. crispata*, *C. ramulosa* and *Trapeliopsis glaucocolepidea*. The most remarkable new *Cladonia* record however is *C. bellidiflora* which is abundant on the heather-thatched roof of the church porch at Old Brampton near Chesterfield at an altitude of only 170m.

Brian Fox has continued to promote work on the basalt where he has surveyed over twenty sites. This has resulted in many new records, including *Amygdalaria pelobotryon*, *Buellia ocellata*, *Caloplaca arenaria*, *Lecania inundata*, *Lecidea lactea*, *Rhizocarpon viridiatrum* and *Schaereria cinereorufa*. Pot Luck Vent and Calton Hill quarry are the richest basalt sites so far discovered.

A number of the new records are a result of previously underworked habitats becoming fashionable and so getting closely examined for the first time. For example, the churchyard species *Arthonia lapidicola* and *Psilolechia leprosa* occur in sites flushed by toxic metals such as on window sills and beside copper lightning conductors, while *Sarcopyrenia gibba* is found on the top of limestone memorials. Disturbed habitats, such as urban wasteland in the centre of Glossop, have yielded a rich crop of records, e.g. *Acarospora heppii*, *Arthopyrenia monensis*, *Collema limosum*, *Lecanora stenotropa* and *Thelocarpon laureri* (Gilbert 1990) while disused lead rakes have continued to provide new species, e.g. *Bacidea saxenii*, *Peltigera ponojensis* and *Vezdaea leprosa*.

The two major rock formations in Derbyshire are the Millstone Grit and the Carboniferous Limestone, these provide continuous and extensive areas of primary habitat which are not yet fully explored. Both continue to produce unexpected lichen records, with *Mycoblastus alpinus*, *Parmelia conspersa*, *Rhizocarpon subgeminatum* and *Thelidium pluvium* from the grit, while limestone has yielded *Acarospora cervina*, *Placynthium garovaglii*, and two more localities for *Peltigera leucophlebia*.

Virtually all the records accumulated over the last twenty years have come from the north of the county, particularly the upland districts; the priority area for further work are the Triassic lowlands where alluvium and boulder clay are widespread.

The following list summarizes records of the more notable Derbyshire lichens accumulated during the period May 1983-December 1992; nomenclature follows the new British lichen flora (Purvis *et al.* 1992). A short list of lichenicolous fungi is also provided. Species not mentioned in 'The lichen flora of Derbyshire' (Hawksworth 1969) or subsequent Supplements (Hawksworth 1974, Gilbert 1983) are preceded by an asterisk (*). All records include the 10 km grid reference, the year they were made and the recorder's name abbreviated as follows: PAA = P A Ardron; BJC = B. J. Coppins; BWF = B. W. Fox; JPG = Jonathan P. Guest; my own records are marked (!)

- **Acarospora glaucocarpa* (Ach.) Körber **18**: damp limestone, Cave Dale, Castleton 1990 !
A. heppii (Naeg. ex Hepp) Naeg. ex Körber **09**: limestone pebble, urban wasteland, Glossop 1989 !
- A. smaragdula* (Wahlenb.) Massal. **26**: sandstone memorial, Edensor churchyard 1992 D. H. Smith.
- **A. umbilicata* Bagl. **27**: sandstone, Stoney Middleton churchyard 1992 D. H. Smith.
- **Amygdalaria pelobotryon* (Wahlenb.) Norman **17**: basalt boulder, Pot Luck Vent, Peak Forest 1991 ! Lava, Knot Low 1991 BWF.
- Anaptychia ciliaris* Körber ex Massal. **17**: wall of Newhouses Farm, Peak Forest 1991 BWF. A second site for this rare and decreasing lichen.
- **Anisomeridium nyssaegenum* (Ellis & Everh.) R. C. Harris **17**: on elm, Foolow Swallet 1991 BJC. **27**: willow and elder, Stoke Brook, Calver 1991 BJC.
- **Arthonia lapidicola* (Taylor) Branth & Rostrup **57**: church windowsill flushed by metal run-off, Churchtown, Darley Dale 1989 !
- **Arthopyrenia monensis* (Wheldon) Zahlbr. **09**: damp brick, urban wasteland, Glossop 1989 !
- A. punctiformis* Massal. **08**: on rowan at Wash and Rough Clough 1992 JPG.
- Bacidia caligans* (Nyl.) A. L. Sm. **09**: urban wasteland, Glossop 1989 ! **17**: bryophilous, lead mines below Hucklow Edge 1991 BJC. **27**: on willow, Stoke Brook, Calver 1991 BJC. The *Bacidia* sp. from Chee Dale and Deep Dale in Gilbert (1983) belongs here.
- B. delicata* (Larbal. ex Leighton) Coppins **17**: damp limestone, Foolow Swallet 1991 BJC.
- B. rubella* (Hoffm.) Massal. **07**: on elm, Great Rocks Dale 1990 JPG.
- **B. saxenii* Erichsen **17**: lead rake, Little Hucklow 1990 P. Cayton.
- B. vezdae* Coppins & P. James **07**: on beech, Fernilee 1990 JPG.
- B. viridescens* (Massal) Hellb. **17**: lead contaminated ground, Tideslow Rake 1979 ! **18**: rabbit droppings and soil, Earl Rake, Bradwell 1978 ! The *Bacidia* sp. from White Rake in Gilbert (1983) belongs here.
- Bryoria fuscescens* (Gyelnik) Brodo & D. Hawksw. **07**: several plants on rowan, Hangman's Clough, Goyt's Moss 1990 JPG.
- **Buellia aethalea* (Ach.) Th. Fr. Widespread in churchyards. First record **28**: Hathersage churchyard 1983 !
- **Buellia ocellata* (Flotow) Körber **17**: on basalt, Lees Bottom Lava, Taddington Dale 1989 BWF.
- Calicium glaucellum* Ach. **07**: Locally frequent on pine stumps in the Goyt Valley 1992 JPG.
- **Caloplaca arenaria* (Pers.) Müll. Arg. **17**: basalt, Calton Hill Quarry, Taddington Dale 1989 BWF.
- C. decipiens* (Arnold) Blomb. & Forss. **18**: limestone outcrop, Cave Dale, Castleton 1990 !
- C. variabilis* (Pers.) Müll. Arg. **17**: limestone wall, village green, Foolow 1991 !
- Candelariella medians* (Nyl.) A. L. Sm. **07**: on dust impregnated ash and sycamore bark, Smalldale 1990 JPG.
- C. reflexa* (Nyl.) Lettau **07** and **08**: on willow, sycamore and elder 1992 JPG. **27**: ancient crack willow, Stoke Brook, Calver 1990 !
- Catillaria chalybeia* (Borrer) Massal. Widespread on sandstone and basalt !
- Cetraria islandica* (L.) Arch. **27**: colony 1m in length under fringe of heather, Big Moor 1990 PAA.
- **Chaenotheca stemonea* (Ach.) Müll Arg. **26**: bark cracks of ancient oak, Old Deer Park, Chatsworth 1991 BJC.
- C. trichialis* (Ach.) Th. Fr. **26**: bark cracks of ancient oaks, Old Deer Park, Chatsworth 1991 BJC. **27**: on oak, ash, willow and elder, Stoke Brook, Calver 1991 BJC & !
- **Chaenothecopsis* cf. *nigra* Tibell **26**: bark cracks of ancient oak, Old Deer Park, Chatsworth 1991 BJC.

- Cladonia arbuscula* (Wallr.) Flotow **27**: on thin peat over rock, Clod Hall Moor 1992 PAA. First record for the Eastern moors.
- **C. bellidiflora* (Ach.) Schaerer **37**: heather-thatched roof of porch, St Peter's and St Paul's church, Old Brampton 1991 D. H. Smith. Usnic and squamatic acids revealed by t.l.c.
- **C. caespiticia* (Pers.) Flörke **27**: acid soil on steep slope, Ramsley Moor 1990 PAA. Checked using t.l.c.
- C. cervicornis* (Ach.) Flotow **27**: acid soil, Ramsley Moor 1990 PAA.
- C. cervicornis* subsp. *verticillata* (Hoffm.) Ahti **28**: on site of 1959 burn, Burbage Moor 1992 PAA. Also two additional records.
- **C. crispata* (Ach.) Flotow **27**: among mature heather, Big Moor and Birchens Edge 1990 PAA.
- C. fragilissima* Osth. & P. James A further ten records from acid moorland in the Ladybower-Snake Pass area.
- C. parasitica* (Hoffm.) **07**: Parkwood Nature Reserve, Taxal 1987 BWF.
- **C. ramulosa* (With.) Laundon Now recognised as frequent on the Millstone Grit moorlands west of Sheffield. First record **27**: abundant among leggy heather, Gardom's Edge–Birchens Edge 1991 PAA. **17**: on the limestone heath, Longstone Moor 1992 PAA.
- Collema limosum* (Ach.) Ach. **09**: mortar-rich soil, urban wasteland, Glossop 1989 !
- Cystocoleus ebuneus* (Dillw.) Thwaites **18**: sandstone cloughs, Derwent Moors 1991 PAA.
- Dermatocarpon minutum* (L.) Mann **17**: Foolow Swallet 1991 !
- Dimerella pineti* (Ach.) Vězda **27**: bark crevices of ancient crack willow by the River Derwent, Calver 1990 !
- Diploschistes muscorum* (Scop.) R. Sant. **17**: mossy wall top, Foolow Swallet 1991 BWF.
- Fuscidea kochiana* V. Wirth & Vězda **08**: sandstone, Cracken Edge Quarry 1990 JPG.
- Hypocenomyce caradocensis* (Leighton ex Nyl.) M. Mayrh. **07**: decorticated oak and beech, Bunsal Cob, Goyt Valley 1990 JPG.
- **Lecania cyrtellina* (Nyl.) Sandst. **08**: on sycamore, Wash 1992 JPG.
- **L. inundata* (Hepp ex. Körber) M. Mayrh. **17**: eutrophicated, horizontal basalt outcrop, Tideswell 1991 ! Det. BJC.
- **Lecanora caesiosora* Poelt **16**: vertical face of a sandstone memorial, Monyash churchyard 1989 ! **17**: vertical basalt, Pot Luck Vent, Peak Forest 1991 ! Both checked by t.l.c.
- L. campestris* subsp. *dolomitica* O. L. Gilbert **07**: base of dust contaminated sycamore, Dove Holes 1988 JPG. **27**: Carboniferous limestone wall, Eyam 1990 ! The *Lecanora* sp. from the Magnesian Limestone in Gilbert (1983) belongs here; the type locality is Creswell.
- **L. handelii* Steiner **18**: iron-rich sandstone, broken down wall, summit of Mam Tor 1985 BWF.
- **L. piniperda* Körber **26**: decaying oak stump, Old Deer Park, Chatsworth 1991 BJC & !
- **L. saligna* (Schrader) Zahlbr. **17**: oak gatepost, Pot Luck, Peak Forest 1991 !
- **L. stenotropa* Nyl. **09**: sandstone, urban wasteland, Glossop 1989 !
- **L. varia* (Hoffm.) Ach. **08**: fence rail, Wash 1990 JPG.
- **Lecidea erratica* Körber **09**: urban wasteland, Glossop 1989 ! **17**: on sandstone fragments, lead mine below Hucklow Edge 1991 BJC. Basalt, Pot Luck Vent, Peak Forest 1991 ! **27**: abundant on chert fragments, lead mine, Upper Coombs Dale 1992 PAA.
- **L. hypopta* Ach. **26**: on lignum of fallen tree, Old Deer Park, Chatsworth 1982 BWF. Frequent in upper parts of the deer park 1991 BJC & !
- **L. lactea* Flörke ex Schaerer **17**: basalt outcrop, Pot Luck Vent, Peak Forest 1991 !
- L. pernigra* Hertel **18**: gritstone boulders, Grindlebrook Torrs, Kinder Scout 1984 BWF. A second Derbyshire record.
- L. plana* (Lahm) Nyl. **07**: sandstone wall, Hoo Moor Road, above Fernilee Reservoir 1984 BWF.

- Lepraria lesdainii* (Hue) R. Harris Widespread in deeply shaded clefts of both the Magnesian and Carboniferous limestones. This is the undescribed green *Lepraria* in Gilbert (1983).
- Leproloma vouauxii* (Hue) Laundon **37**: sandstone, Old Brampton church 1991 D. H. Smith, Previous records of *Lepraria membranacea* (Weis) Sm. belong here.
- Leptogium turgidum* (Ach.) Crombie **17**: basalt, Wall Cliff, Tideswell 1991 BJC. **27**: wall-top, village green, Foolow 1991 BJC; Calver Bridge 1991 BJC.
- **Micarea bauschiana* (Körber) V. Wirth & Vězda Widespread, acid rock underhangs. First record **19**: Cote Clough, Derwent 1985 !
- **M. botryoides* (Nyl.) Coppins Widespread, acid rock underhangs. First record **19**: Cote Clough, Derwent 1985 !
- **M. myriocarpa* V. Wirth & Vězda ex Coppins Widespread, acid rock underhangs. First record **19**: Cote Clough, Derwent 1985 !
- M. peliocarpa* (Anzi) Coppins & R. Sant. Widespread, acid rock underhangs !
- **Mycoblastus alpinus* (Fr.) Kernst **26**: on vertical side of a shaded sandstone boulder, upper regions of the Old Deer Park, Chatsworth 1991 BJC & !
- M. sterilis* Coppins & P. James **26**: frequent on lignum, Old Deer Park, Chatsworth 1991 BJC & !
- Ochrolechia parella* (L.) Massal. **18**: sandstone wall, Derwent village 1991 PAA. **26**: parapet of sandstone bridge, Haddon Hall 1992 ! Roadside wall, Churchtown, Darley Dale 1992 !
- Omphalina hudsoniana* (Jenn.) Bigelow (*Coriscium viride*) **27**: Padley Gorge 1988 Barbara Porter.
- Opegrapha gyrocarpa* Flotow **26**: sheltered recesses of sandstone outcrop, Old Deer Park, Chatsworth 1991 BJC.
- **O. herbarum* Mont **07**: sycamore, King Sterndale 1990 JPG.
- O. saxicola* Ach. **18**: sheltered limestone, Cave Dale, Castleton 1990 !
- O. varia* Pers. **17**: old ash tree, Monks Dale 1991 BWF.
- **O. zonata* Körber **26**: sheltered recesses of sandstone outcrop near stream, Old Deer Park, Chatsworth 1991 BJC.
- Parmelia caperata* (L.) Ach. **08**: on mature crack willows, Watford Lodge 1990 JPG. **09**: on willow, Longdendale 1991 S. Hird. These young invading thalli are the first records since 1845.
- **P. conspersa* (Ehrh. ex Ach.) Ach. **26**: single large thallus on flag-stone roof, Beeley village 1985 !
- **P. perlata* (Huds.) Ach. **08**: small thalli invading mature crack willows near Wash and Chepl-en-le-Frith 1992 JPG.
- **P. revoluta* Flörke Spreading throughout the county, particularly on willows. **07**: lignicolous, Combs reservoir 1988 JG. **27**: on willow, Barbrook Plantation, Big Moor 1990 PAA. On willow, Calver Bridge 1991 ! **37**: on willow and gritstone, Ramsley Moor 1990 PAA. Also **07, 08, 09**: JPG.
- P. subrudecta* Nyl. **07**: Watford Lodge 1990 JG. **08**: Combs Reservoir 1988 JPG.
- P. sulcata* Taylor **27**: In fruit on crack willow, Calver Bridge 1992 PAA.
- P. tiliacea* (Hoffm.) Ach. **08**: sunny wall, Chinley 1990 JPG. **18**: on elaterite, Windy Knowe near Castleton 1985 BWF.
- **Parmeliopsis aleurites* (Ach.) Nyl. **26**: occasional, on huge fallen decorticated oak trunks, Old Deer Park, Chatsworth 1991 !
- Peltigera horizontalis* (Huds.) Baumg. **27**: Wall Cliff basalt outcrop, Tideswell 1991 !
- P. leucophlebia* (Nyl.) Gyelnik Damp north-facing grassland often over-shadowed by trees. **07**: Deepdale 1991 BWF. **26**: Bradford Dale 1991 BWF.
- **P. ponojensis* Gyelnik **27**: overgrowing soil, lead mine, Eyam 1991 P. D. Crittenden. Det. O. V. Vitikainen.

- Pertusaria albescens* var *corallina* (Zahlbr.) Laundon **18**: locally abundant on sandstone boulders by the stream, Blackden Brook 1992 !
- Petractis clausa* (Hoffm.) Krempelh. **18**: Cave Dale, Castleton 1990 !
- **Physcia aipolia* (Ehrh. ex Humb.) Fümrohr This species is starting to spread. **07**: on willow, Goyt Valley 1988 JPG. **26**: roadside elder, Beeley Lodge 1991 BJC.
- **Placynthiella uliginosa* (Schrader) Coppins & P. James **17**: lead spoil, mine below Hucklow Edge 1991 !
- **Placynthium garovaglii* (Massal.) Malme **18**: dry limestone underhangs, Cave Dale, Castleton 1990 BWF. Conies Dale, Peak Forest 1992 BWF.
- Polyblastia cupularis* Massal. **18**: limestone outcrop, Cave Dale, Castleton 1990 ! Conies Dale 1992 BWF.
- Polysporina simplex* (Davies) Vězda **37**: on sandstone, church at Old Brampton 1991 D. H. Smith.
- Porpidia cinereoatra* (Ach.) Hertel & Knoph **17**: basalt outcrop, Pot Luck Vent, Peak Forest 1991 BJC & **37**: sandstone chest tomb, church at Old Brampton 1991 D. H. Smith. Previous records of *P. albocaerulescens* mostly belong here.
- P. soredizodes* (Lamy) Laundon Frequent on sandstone and basalt, often associated with disused lead mines !
- **Psilolechia leprosa* Coppins & Purvis On substrates flushed with copper run-off. **26**: limestone memorial, churchyard, Churchtown, Darley Dale 1989 ! **18**: Castleton church below east window 1990 ! **37**: windowsill, Old Brampton church 1991 D. H. Smith.
- Ramalina fraxinea* (L.) Ach. **08**: dust contaminated poplar, Long Lane School, Chapel-en-Frith 1989 JPG.
- **Ramonia* aff. *luteola* Vězda **27**: elder, Stoke Brook, Calver 1991 BJC.
- Rhizocarpon concentricum* (Davies) Beltr. **18**: Ecton Mine 1984 BWF. Basalt outcrops, Cave Dale 1989 BWF.
- **R. subgeminatum* Eitner **28**: Burbage Moor, north of the Fox House 1992 PAA.
- **R. viridiatrum* (Wulfen) Körber **17**: basalt, Tideswell Quarry 1981 BWF.
- **Sarcopyrenia gibba* Nyl. **57**: Magnesian limestone memorial, Whitwell Church 1989 C. J. Hitch & P. Cayton. **26**: Carboniferous limestone memorial, churchyard, Churchtown, Darley Dale 1989 !
- **Schaereria cinereo-rufa* (Schaerer) Th. Fr. **17**: basalt boulder, Pot Luck Vent, Peak Forest 1991 ! **19**: sandstone, Abbey Brook, Howden Moors 1992 PAA. **27**: sandstone, Baslow Edge PAA 1992.
- Solorina spongiosa* (Ach.) Anzi **18**: abundant, limestone cliff ledge, Cave Dale, Castleton 1990 T. Duke.
- Staurothele rupifraga* (Massal.) Arnold **17**: wall-top, Oxlow Rake, Peak Forest 1990 BWF.
- Steinia geophana* (Nyl.) B. Stein **17**: lead contaminated soil, Little Hucklow 1987 !
- Stereocaulon dactylophyllum* Flörke **28**: sandstone wall above Priddock Wood 1984 BWF & **17**: roadside wall, Foolow village 1990 BWF. Roadside wall, Potluck 1990 BWF.
- **S. evolutum* Graewe **19**: boulders by stream, Snake Pass 1992 PAA.
- S. nanodes* Tuck. **17**: basalt, Pot Luck Vent, Peak Forest 1991 BWF.
- S. pileatum* Arch. **18**: iron-rich sandstone, broken down stone wall, summit of Mam Tor 1985 BWF & !
- **S. vesuvianum* var *symphycheiloides* Lamb **32**: disused railway sidings, Willington Power Station 1990 !
- **Strangospora moriformis* (Ach.) B. Stein **07**: on ash, Fernilee 1990 JPG.
- **Thelidium minutulum* Körber **09**: sandstone, urban wasteland, Glossop 1989 !
- T. papulare* (Fr.) Arnold **25**: shaded limestone, Bonsal Mines 1984 BWF.
- **T. pluvium* A. Orange. **19**: dripping sandstone boulder by a rocky stream, Cote Clough, Derwent Reservoir 1984 !

- **Thelocarpon laureri* (Flotow) Nyl. **09**: on brick, urban wasteland, Glossop 1989 !
- Toninia lobulata* (Sommerf.) Lyngb **18**: on moss over limestone, Cave Dale, Castleton 1990 !
- **Trapelia obtegens* (Th. Fr.) Hertel Frequent on damp sandstone !
- T. placodioides* Coppins & P. James The records of *T. obtegens* in Gilbert 1983 belong here. This species is widespread on basalt.
- Trapeliopsis gelatinosa* (Flörke) Coppins & P. James Widespread on damp peat and mineral soil in upland areas !
- **T. glaucolepidea* (Nyl.) G. Schneider **19**: wet peat, upper Mill Brook, Howden Moors 1990 PAA. **27**: dry peat over sandstone, Lawrence Field, Padley 1991 PAA. **28**: wet peat, Burbage Moor 1992 PAA.
- **T. pseudogranulosa* Coppins & P. James Widespread on wet peat in the uplands !
- Umbilicaria deusta* (L.) Baumg. **28**: sloping boulder beside track, East side of Ladybower Wood 1986 ! Hollow on gritstone boulder, Hurling Stones 1992 PAA.
- U. polyrhiza* (L.) Fr. **28**: Hoar Clough, Hurling Stones, and the Rocking Stone, Derwent Moors 1991 PAA.
- **Usnea filipendula* Stirton **26**: on several sheltered sandstone boulders in relic oak woodland, Old Deer Park, Chatsworth 1991 BJC & !
- Verrucaria caerulea* DC. **18**: limestone, Cave Dale, Castleton 1990 !
- V. macrostoma* Dufour ex DC. All previous records of *V. viridula* belong here.
- **Vezdaea leprosa* (P. James) Vězda **17**: on lead contaminated soil, Hucklow Edge 1991 BJC. **18**: Speedwell Cavern, Castleton 1990 BWF.

Lichenicolous fungi

- Clypeococcum hypocenomyceae* D. Hawksw. **26**: on *Hypocenomyce scalaris*, Old Deer Park, Chatsworth 1991 BJC.
- Geltingia groenlandiae* Astrup & D. Hawksw. **15**: on *Caloplaca citrina*, Tissington churchyard 1990 C. J. Hitch. New to England.
- Guignardia oliveri* (Verm.) Sacc. **25**: on *Xanthoria parietina*, Bonsal Moor 1984 BWF.
- Muellerella lichenicola* (Sommerf.) D. Hawksw. **18**: on *Caloplaca*, basalt 1985 BWF.
- M. pygmaea* (Körber) D. Hawksw. **18**: on *Lecidea*, Oxlow Rake, Peak Forest 1985 BWF.
- Skyttea spinosa* D. Hawksw. & Coppins **17**: on *Verrucaria macrostoma*, Wall Cliff basalt outcrop, Tideswell 1991 BJC. Second record for the UK.

ACKNOWLEDGEMENTS

I am grateful to the many people who sent in records and particularly to Dr B. J. Coppins for his continuous help and interest.

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BREEDING ACTIVITIES OF PARROT CROSSBILLS *LOXIA PYTYOPSITTACUS* IN SOUTH YORKSHIRE IN 1983

JEFF LUNN AND JOHN E. DALE

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INTRODUCTION

Following an invasion of Common Crossbills *Loxia curvirostra* and Parrot Crossbills *L. pytyopsittacus* into Britain in late autumn 1982, parties of both species established themselves in the Pennine conifer plantations of Derbyshire and South Yorkshire throughout the winter and into the spring of 1983 (Catley & Hursthouse 1985).

At Swinden Plantation, Langsett, South Yorkshire, four Parrot Crossbills were located on 23 February 1983 and up to 11 birds were identified on at least 17 dates by 13 separate observers up to 7 May (Rogers & the Rarities Committee 1983).

Four territories were established, and at least two pairs were involved in breeding activity. One of these successfully raised young. This paper documents these breeding attempts.

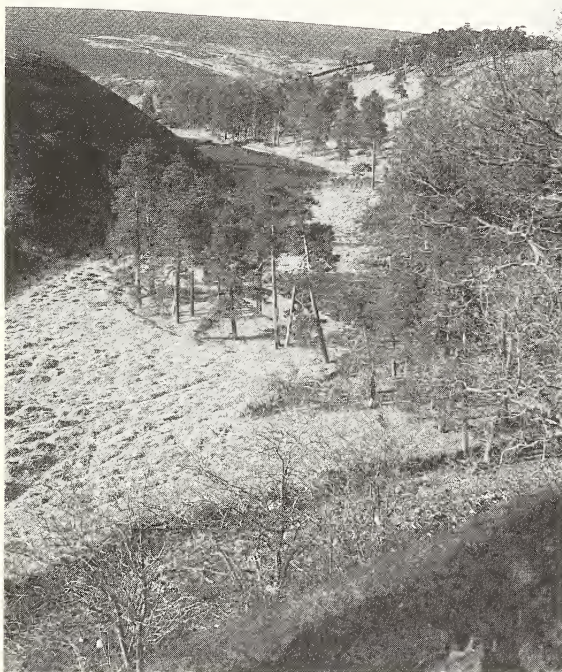


FIGURE 1
Swinden Plantation, Langsett, Yorkshire

HABITAT

Swinden Plantation (Figure 1) lies alongside the north bank of the Little Don River, a fast flowing moorland stream in the southern Pennines. Although classed as an ancient semi-natural woodland (Nature Conservancy Council 1986), it has been considerably modified such that it now consists of an extensive area of heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus* and bracken *Pteridium aquilinum*, scattered with trees. These are predominantly mature planted Scots pine *Pinus sylvestris* and larch *Larix decidua*, some of which had 'cone cropped' heavily in 1982/83 providing an abundant food source for crossbills. The area bears little resemblance to a modern plantation since the conifers are widely scattered, are of uneven age and many are stunted and deformed, giving the site more of an appearance of the Scottish Highlands than a recent plantation (Figure 1). More recent and typical Forestry Commission softwoods, mainly Sitka spruce *Picea sitchensis* and Norway spruce *P. abies* plantations, surround the nearby Langsett Reservoir towards which birds were occasionally seen flying. It is, however, pertinent to note that pine, larch and spruce cones were all plentiful and that the numbers of breeding crossbills of all species are thought to be correlated with the size of the cone crop, with larger numbers nesting in years of good crop. Further, although it is recognised that Scottish *L. scotica* and Parrot Crossbills are better adapted to exploit the harder and tougher cones of pine than are Common Crossbills, it is known that their ecological niches overlap (Nethersole-Thompson 1975). At Swinden, both Common and Parrot Crossbills were observed feeding on larch, but only Parrots were seen feeding on pine and only Commons were observed feeding in the nearby spruce plantations.

BREEDING ATTEMPTS

Following the first report of four Parrot Crossbills on 23 February, four territories were located. Territories, designated A, B and C, were located in a small area consisting mainly of Scots pine, with a further territory, D, some 500 metres to the north, in mixed pine and larch.

TERRITORY A

An adult pair was present on 27 February, the male singing briefly. On 13 March, with the male in close, but passive attendance, the female was observed for about five minutes and was seen to carry fine twigs and dead grasses to the top of small, but dense, larch about six metres high. Shortly afterwards, both birds were seen feeding in other nearby larches and following a brief burst of song by the male, courtship feeding took place. No further observations were made.

TERRITORY C

A first year male was recorded singing on 27 February and a pair was noted on 2 April.

TERRITORY D

A male was recorded singing on 27 March, with a female *Loxia* observed visiting various pines and possibly prospecting for nest sites. Two pairs were observed courtship feeding on 9 April.

TERRITORY B

A female was seen nest building for about 15 minutes on 2 April, collecting from within eight metres of the nest tree (a small Scots pine about four metres high) both wool and dead vegetation (mainly grasses) from the ground and broken branches. The nest was visible in the top fork of the tree. A first year male in close attendance did not collect material, but moved to the tops of nearby trees whenever the female returned to the nest. No birds were noted on 9 April, but the nest appeared to be complete (the birds could possibly have been the ones at Territory D), the female next being noted on the 15th. On the 23 April the female was seen to leave the nest and to preen and rest on the nest tree. A male then arrived, calling, visited the nest, then the pair flew south with a third individual. Shortly

afterwards the pair returned, the female immediately entering the nest tree and the male remaining close by. No birds were seen on 30 April, but the nest was intact. On the final date of observations, 7 May, the nest had been disturbed and appeared to have been half pulled out of the tree; non-human interference was suspected.

However, a party of seven birds including at least one adult male, two adult females and two juveniles were seen feeding in nearby pines. A female was seen to feed a begging juvenile on two occasions.

DISCUSSION

The above account points to the successful breeding of Parrot Crossbills at Langsett in 1983. However, both the Rare Birds Breeding Panel (RBBP) and the British Birds Rarities Committee (BBRC) examined the information available to them and formed the opinion that the specific identity of the juveniles seen on 7 May had not been proved conclusively and that successful breeding by Parrot Crossbills had therefore not been proved (J. T. R. Sharrock, *in lit.*).

Although the juveniles were not specifically identified as Parrot Crossbills, the prior events and family behaviour on 7 May lead to this conclusion. Common Crossbills also bred elsewhere in the general area in the same period, but since instances of interspecific feeding of newly fledged juveniles between *Loxia* species has never before been recorded (D. B. A. Thompson, pers. comm.; Newton 1972; Nethersole-Thompson 1975) this possibility for the events on 7 May seems untenable. Further points add weight to this position. Firstly, the young of crossbills stay longer in the nest and become fully independent at a much later age than those of any other small bird breeding in Britain, making it all the more unlikely that parents should lose touch with or should false feed other than their own young (Nethersole-Thompson 1975). Secondly, during the fledging period the parents actively guard and cajole the young and will even recall them into the nest for several days post-fledging, further discounting the possibility of 'mistaken identity' (Nethersole-Thompson 1975). Thirdly, for the first 10-14 days after the young have flown from the nest, parents and brood stay together as a family unit, sometimes quite close to the nest territory (Nethersole-Thompson, 1975).

It is noteworthy that Knox (1990), in a detailed study of Scottish Crossbills in the Highlands, concluded that no evidence exists for the interbreeding of Common and Scottish Crossbills and considered that hybridisation does not occur between the two species, despite the ample opportunities which occur. It is difficult to believe that a similar situation does not exist between Common and Parrot Crossbills, especially as the two species are even more clearly differentiated and that the Scottish Crossbill appears to be morphologically closer to the Common Crossbill than to the Parrot Crossbill. Further, Knox's criteria for records of successful breeding were based only on nests or recently fledged young.

Assuming an incubation and fledging period of 29-41 days (Newton 1972) and counting from 27 February as the first date of observations of birds on territory, this would theoretically put the first egg date between 27 March and 8 April, the young hatching between 8 and 21 April and fledging between 26 April and 7 May, tying in well with the recorded dates.

Based on the above arguments and information, it is clear that at least two pairs of Parrot Crossbills were engaged in breeding behaviour and that one of these succeeded in raising at least two young. The authors contend that the opinions of the RBBP and BBRC were unduly cautious and in the absence of any evidence to support the suggestion of interspecific feeding of recently fledged juveniles by Common and Parrot Crossbills, the record should stand. Readers are invited to reach their own conclusion.

Although Parrot Crossbills probably bred in Surrey in 1963 (Davis 1964), this record constitutes the first proven successful breeding record for Britain. It is interesting to note that the second and third records, in Norfolk in 1984 and 1985, followed shortly afterwards.

SUMMARY

An account is given of the first proven successful breeding record of Parrot Crossbills *Loxia pytyopsittacus* in Britain. At least two, and possibly four, pairs showed signs of breeding at Langsett, South Yorkshire in 1983 and one pair was successful in rearing at least two young. The record has not been nationally accepted and arguments are presented to challenge this view.

ACKNOWLEDGEMENTS

The authors would like to record their grateful thanks to Dr D. B. A. Thompson for his encouragement and for helpful comments on an earlier draft of this paper.

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BOOK REVIEW

The Birds of Moray and Nairn by M. Cook. Pp. 263, with 24 bird and habitat photographs by J. Edelsten and 36 drawings by P. Hirst and R. Proctor. Mercat Press, Edinburgh, 1992.

This reasonably priced book is the culmination of over 20 years field recording by the last three official bird recorders. The last significant publication on the avifauna of the districts was published last century. The author begins by discussing the various habitats in the area and these are illustrated with photographs. The most interesting habitats are given, along with the best times to visit, easiest access and the various specialities to be seen. The habitat spectrum is covered from lochs, grassland, sand-dunes, forest, rivermouth, bays, sea-cliff and upland areas. There is a list giving the earliest and latest arrival dates for migrants and this is followed by the species accounts, including interesting information on historical records of rarities. Each account gives the common and Latin names followed by the bird's status, whether resident breeder or winter migrant; frequency of occurrence, rarity or introduction, and interesting ringing records are mentioned. Occurrence of selected less common species is mapped on a 5km grid map and some other species are shown in histograms on a monthly or half monthly basis. The references are gleaned from a number of sources including the *Annals of the Scottish Natural History Society*, *British Birds*, the RSPB and NCC. A four page appendix gives the Ordnance Survey grid references for the various localities throughout the book and there is a second appendix giving a list of the total number of species, each with a blank space for a twitcher's tick. Finally there is an extensive bibliography and index to places and species. In the main I am happy with the contents and the print is clear and easy to read but some of the photographs have not reproduced too well. The book, which is in paperback, has an attractive pictorial cover showing Caledonian pine forest with an inset of the Crested Tit. At £8.95 this is good value.

RECORDER'S FOURTH REPORT ON THE ACULEATE HYMENOPTERA IN WATSONIAN YORKSHIRE AND THE DEVELOPMENT OF A QUALITY SCORING SYSTEM

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The Watsonian list of aculeate Hymenoptera (YLIST) in January 1993 contained 306 species and 11017 records (Table 1). A record is an observation on a specimen differing in one of the following three variables: name, sex and day of capture or observation. J. T. Burn has added one species of Dryinidae (*Anteon flaviscapus*) and the first species of the family Embolemidae (*Embolemus ruddii* Westwood) since my third report (*Naturalist* **115**: 105).

TABLE 1
The number of species and records of aculeate
Hymenoptera from Watsonian Yorkshire

Family	No. species	No. records
Dryinidae	22	—
Embolemidae	1	—
Bethylidae	5	—
Chrysidae	16	342
Tiphidae	2	9
Mutillidae	2	92
Sapygidae	2	26
Formicidae	17	—
Pompilidae	21	576
Eumenidae	13	557
Vespidae	7	—
Sphecidae	73	2827
Collectidae	9	270
Andrenidae	35	2467
Halictidae	27	2089
Melittidae	1	6
Megachilidae	13	370
Anthophoridae	19	1386
Apidae	22	—

Omalus aeneus (Fabricius, 1787). New species for Watsonian Yorkshire. Howell Wood (SE40, Aug. 1992, J. D. Coldwell). This was recorded by Roebuck (1907, Victoria County History) from Yarm by G. T. Rudd. However, the Yarm specimen cannot be found so the new specimen confirms its presence in Yorkshire.

Chysis pseudobretvitaris Linsenmaier, 1951. This species, which was first reported in *Naturalist* **115**: 106, should be withdrawn. Attempts to locate further specimens at Keswick Fitts have failed so the previous specimen should be considered a small male of *C. impressa* Schenck, 1856 with the unusual feature that both spurs of the tibiae of the middle leg are more-or-less the same length.

- Priocnemis susterai* Haupt, 1927. New species for Watsonian Yorkshire. Gundale (SE88, May 1990, M. E. Archer).
- Cerceris arenaria* (Linnaeus, 1758). New species for Watsonian Yorkshire. Crow Wood (SK69, Aug. 1991, J. T. Burn).
- Colletes halophilus* Verhoeff, 1943. The second record has been reported from Welwick saltmarsh (TA31, Sept. 1991, D. Sheppard).
- Nomada flava* Panzer, 1798. This species, reported first in *Naturalist* **112**: 111, should be withdrawn. Studies of males of *N. panzeri* Lepeletier, 1841 show that it exists as both a small dark form and a large light-coloured form in Watsonian Yorkshire. The records of *N. flava* are based on the male which corresponds to the large light-coloured form of *N. panzeri*. It is possible that *N. flava* will be found in Yorkshire as recently I have seen two females from Derbyshire (nr. Hollin Wood, SK3175; Calke Park, SK3622).
- Nomada fulvicornis* Fabricius, 1793 (*lineola* Panzer, 1798). This species was reported first for Watsonian Yorkshire by Roebuck (1877, *Trans. Y.N.U.*: 57) from Smith MS. Butterfield and Fordham (*Naturalist* **55**: 243) stated the records from Smith MS. were of species that occurred or should occur near Wakefield. As such this record cannot be accepted. The species was reported from Humanby (*Naturalist* **96**: 137), Speeton (*Naturalist* **97**: 30) and Faxfleet (*Naturalist* **105**: 55) based on specimens determined by J. H. Flint. I have seen the Speeton and Faxfleet specimens which were misidentified and are *N. goodenian* (Kirkby, 1802) so these three records can be rejected. However, the species has recently been found at Crow Wood (SK69, April 1987, M. E. Archer) so that at last Frederick Smith has been proved correct.

With the completion of the assembly of the records of the solitary species an attempt can be made to develop a quality scoring system so that localities can be graded. The solitary wasp and bee species were ranked separately according to the number of localities in which each species was found. A locality is defined by its one kilometre grid reference so that no two localities can have the same one kilometre grid reference. A locality can extend over more than one kilometre square. The ranked species were divided, as equally as possible, into four statuses: common, frequent, occasional and rare. Where the divide between two statuses occurred within a run of the same number of localities the nearer change in the number of localities was taken as the separating boundary. Each species could then be given a status score (Table 2). In addition a species was given a higher status score if it was a nationally scarce or rare (Red Data Book) species (Table 2).

TABLE 2
Status scores of different species statuses

Species status	Status score
Common	1
Frequent	2
Occasional	4
Rare	8
Nationally scarce	16
Nationally rare	32

For a given locality all the species from that locality can be given a status score. If these scores are added up the quality for that locality is attained, e.g. Crow Wood with 101 species of solitary wasps and bees has a quality score of 405. If the quality score of the locality is divided by the number of species the species quality score for that locality is attained, e.g. Crow Wood has a species quality score of 405/101 equal to 4.0. Species quality scores are given for several Watsonian Yorkshire localities in Table 3. Table 3 also shows the number

of Watsonian Yorkshire rare species found at each locality. At present 35 species of solitary wasps and 26 species of solitary bees are considered rare in a Watsonian Yorkshire context.

The term 'local' as applied to a species can be defined as a species having relatively more records from relatively fewer localities, i.e. a higher record/locality ratio. Based upon record/locality plot (*Naturalist* 114: 6) and personal experience 31 species of solitary wasps (record/locality ratio for species above 2.44) and 25 species of solitary bees (record/locality ratio above 2.31) are considered to be local species (Table 3).

Finally, a locality can be characterized by the number of nationally scarce and rare species recorded from it (Table 3).

Table 3 shows six measures of locality quality. The rank order of the localities will vary according to the quality measure used. The advantage of the species quality score is that it allows comparison between localities without regard to species richness (number of species) or the area of the locality; for example, the species quality scores of Skipwith Common and Swincarr Plantation are more-or-less equal although the locality sampled at Swincarr Plantation was really just a small sand pit.

Ideally the quality characteristics of localities should be based upon the results of systematic recording. In practice many records are casual records from people interested in other groups of organisms or specialists looking for rarities. Such specialist recording could artificially enhance the species quality score of a locality. Only by considering localities with more-or-less complete lists can the problems associated with unsystematic sampling be avoided. However the message must be that all species, no matter how common, should be recorded on each visit to a locality.

TABLE 3

Quality characteristics of Watsonian Yorkshire localities based on solitary wasp and bee species ranked in order of importance of species quality score

	No. species	Quality score	Species quality score	No. Yorks. local spp.	No. Yorks. rare spp.	No. national scarce & spp.
Crow Wood	101	405	4.0	30	15	9
Pre-coniferised:						
Allerthorpe Common	129	484	3.8	43	6	9
Strensall Common	91	289	3.2	36	5	6
Post-coniferised:						
Allerthorpe Common	75	212	2.8	36	1	3
Pomporali	52	138	2.7	16	1	3
Skipwith Common	69	149	2.2	23	1	2
Swincarr Plantation	35	74	2.1	21	0	1
Thorne Moor	63	125	2.0	14	1	1

FIELD NOTE

SYSTEMUS PALLIDUS (DIPTERA, DOLICHOPODIDAE) IN YORKSHIRE

On 1st August 1992, a male of this species was swept from Pot Ridings Wood near Doncaster, South Yorkshire (GR SE5300). Speight and Meuffels (1989) added this species to the British Isles list on the basis of specimens bred from water-filled tree cavities ('rot-holes') in Ireland, and from an examination of English material in the Paris Museum, which revealed a male and female from Cambridgeshire and a male from Suffolk. The species was described from Chartreuse, France (Vaillant 1978) and does not appear to have been recorded elsewhere. It was formerly confused with *S. pallipes*, regarded as 'notable' by the Nature Conservancy Council (Falk 1991).

Pot Ridings Wood is a designated SSSI of mainly ancient woodland situated on magnesian limestone. A long list of 'red data book' and 'notable' species have been recorded from this wood. Water-filled tree holes are frequent but no attempt has been made to breed Diptera from these, although mosquito and hoverfly (*Eristalis* sp.) larvae have been noted in them.

Examination of *S. pallipes* in collections will probably reveal *S. pallidus* to be more widespread than the scanty records currently show.

ACKNOWLEDGEMENTS

My thanks to David Park (Steetley Quarry Products) for commissioning the invertebrate work in the Wood.

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BOOK REVIEW

The Correspondence of Charles Darwin, Volume 8, 1860 edited by **Frederick Burkhardt, Duncan M. Porter, Janet Browne and Marsha Richmond**. Pp. xl + 766, plus 9 plates. Cambridge University Press, 1993. £40.00.

This authoritative work maintains the very high standard of the previous volumes (vide earlier reviews in *The Naturalist*). Although the approach is encyclopaedic, the letters build up a fascinating autobiographical account of this remarkable man. This volume is particularly interesting in that it contains the correspondence arising from, and reference to reviews of, the *Origin of Species*, published the previous year, including (as Appendix V) Patrick Matthew's letter to the *Gardeners' Chronicle*, in which he claimed to have formulated a principle of natural selection. The letter, reproduced in full, contains sections of his *Naval Timber and Arboriculture*, published in 1831, thereby predating Darwin's work. In a letter to the *Gardeners' Chronicle*, Darwin replied "... I freely acknowledge that Mr. Matthew has anticipated by many years the explanation which I have offered of the origin of species, under the name of natural selection. I think that no one will feel surprised that neither I, nor apparently any other naturalist, had heard of Mr. Matthew's views, considering how briefly they are given, and that they appeared in the appendix to a work on Naval Timber and Arboriculture. I can do no more than offer my apologies to Mr. Matthew for my entire ignorance of his publication. If another edition of my work is called for, I will insert a notice to the foregoing effect". Darwin did indeed revise the historical sketch to the third edition of *Origin* in order to name Matthew among his predecessors.

As well as containing c. 470 letters, many of them relating to Darwin's reaction to public opinion of his revolutionary theory, there are very detailed editorial notes and comments, a bibliography (more than 540 entries), a biographical register and index to correspondents, a chronology for 1860, details of new material added to the American edition of the *Origin*, a list of the reviews of the *Origin* which appeared in 1859-1860, and a report of the famous British Association in Oxford at which Huxley defended Darwin's theory in debate with Samuel Wilberforce, Bishop of Oxford.

The editors are to be congratulated once again for their dedication to this project and the publishers for their production of this definitive work.

MRDS

NOTES ON YORKSHIRE MOLLUSCA – NUMBER 10

PISIDIUM TENUILINEATUM STELFOX, 1918

A SMALL BIVALVE MOLLUSC, NEW TO YORKSHIRE

A. NORRIS
Leeds City Museums

The recent discovery of a single living specimen of the small freshwater bivalve *Pisidium tenuilineatum* Stelfox, 1918 in the River Wharfe at Grassington (NGR SD34/997639), brings the total number of *Pisidium* species recorded from the county to 15, out of a total of 16 recorded from the British Isles as a whole.

The specimen was collected by a National Rivers Authority biologist whilst taking invertebrate samples for the National Rivers Communities Project on May 8th 1990. The molluscan sample was forwarded to the Institute of Freshwater Ecology at Monks Wood, and later confirmed by Dr M. P. Kerney, the National Recorder for Mollusca.

The very small size of this freshwater bivalve, 1.8 x 1.4 x 1.1 mm. (Ellis, 1978) makes it one of our smallest, most easily overlooked and under-recorded species of *Pisidium*. First discovered by Charles Oldham in the Grand Union Canal in Buckinghamshire, it has since been recorded from the Shropshire Union Canal and the rivers Thames, Severn and Trent. The specimen found in the River Wharfe occurred over 100 miles north of any other known site for this rare bivalve.

The present method of collecting freshwater mollusca, using sieves with a 2 mm mesh, would not pick up either this species or the closely related and even smaller *Pisidium moitessierianum* Paladilhe, 1866, which is only known in Yorkshire from the Huddersfield Narrow Canal (Watkin & Morphy 1976), and the River Ouse at York (Kerney, pers comm.). New collecting methods will need to be developed if these two species are to be recorded and their distribution noted within the river systems in the future.

P. tenuilineatum is known to be a calcicole, requiring water with high concentrations of free calcium. The River Wharfe, with its headwaters in the mountain limestone, is therefore an ideal habitat. The use of the River Wharfe as a conduit for transferring water from the collecting reservoirs on the high moorlands to pumping stations down-river could change the nature of its lower reaches and therefore affect and restrict the range of this and other organisms in the river.

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FIELD NOTE

TRIFID BUR-MARIGOLD AND ASSOCIATED FLIES

Trifid Bur-marigold (*Bidens tripartita* L.) is uncommon in South-east Yorkshire (VC61), (Crackles F. E., 1990, *Flora of the East Riding of Yorkshire*, p. 130, Hull University Press & Humberside County Council).

There are few post-1960 records for the plant in Lower Derwentland, but it grows in profusion in an uncut area of the Lower Derwent Valley National Nature Reserve at Wheldrake Ings at approximately SE/706438 where, in the autumn, the barbed fruits are a considerable nuisance to anyone walking through the vegetation.

Earlier in the season, when the plants are in bloom, large numbers of hoverflies are attracted to them, and on 29 August 1992 the following common species which were visiting the flower heads were listed: *Syrphus ribesii* (L.), *Metasyrphus corollae* (Fab.), *Episyrphus balteatus* (Deg.), *Pyrophaena granditarsa* (Forst.), *Syritta pipiens* (L.), *Helophilus hybridus* Loew, *H. pendulus* (L.), *Eristalis arbustorum* (L.), *E. intricarius* (L.), *E. tenax* (L.), *Eristalinus sepulchralis* (L.).

In addition to the hoverflies an example of the tephritid fly *Dioxya bidentis* (Robineau-Desvoidy) was also found. This 'picture-winged' fly is associated with Trifid Bur-marigold, attacking the capitula. Tephritid flies are well known gall-causers, with a special predilection for Compositae.

D. bidentis has a current national rarity classification of 'Notable', defined as species estimated to occur in the range 16-100 modern 10 km squares (Falk, S., 1991, *Research and Survey in Nature Conservation No.39. A review of the scarce and threatened flies of Great Britain (Part 1)*, Nature Conservancy Council, Peterborough).

The species is here recorded for the first time in Yorkshire; another specimen had been collected at Wheldrake Ings by the author a few days earlier, on 22 August 1992.

Thanks are due to English Nature for access to, and permission to collect in, the Lower Derwent Valley National Nature Reserve.

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ENTOMOLOGICAL REPORTS FOR 1987-1992 HYMENOPTERA: SYMPHYTA

J. H. FLINT

There has been an appreciable slackening of interest in the sawflies in the last year of the period now under review. Nevertheless, a number are reported which in the present state of our knowledge must be considered rare or at least uncommon. Our knowledge is decidedly patchy, as can be seen in the numbers recorded from each of the five vice-counties, i.e., VC61 183, VC62 217, VC63 218, VC64 263, VC65 72.

Not all the genera have received the same level of treatment from collectors, those in the Nematinae being to an extent neglected and of the 45 species of *Pristiphora* on the British list only 18 are recorded from Yorkshire. In contrast, 27 of the 28 British species of *Dolerus* are known; the missing one, *Dolerus harwoodi* Benson, should be searched for.

The species listed below are those that have not previously been found in Yorkshire, have only rarely been found or have been found in parts of the county from which they were not previously known. Thanks are due to those who have contributed records, indicated by initials in the list below: J. D. Coldwell (whose records constitute the bulk of this report), M. L. Denton, W. A. Ely, H. E. Flint, J. H. Flint, P. Kendall and J. A. Newbould. The usual symbols denote county (+) and vice-county (*) records.

+*Pamphilius betula* (Linnaeus) (63) Bretton Lakes (SE2712), 7/6/89; JDC.

P. gyllenhalii (Dahlbom) (63) Falthwaite Bottom (SE3103), 20/6/87; Bretton Park, 1/7/87; Wharmcliffe Wood (SK3095); JDC. Only previously at Roche Abbey, 1980.

P. pallipes (Zetterstedt) (63) Wharmcliffe Wood, 27/5/87; JDC.

Xiphydria camelus (Linnaeus) (63) Oak Hill, Goole (SE7121), 18/6/87; PK.

Hartigia nigra (Harris) (*62) Ashberry Reserve, 8/6/80; JHF. Second Yorkshire record.

Zaraea fasciata (Linnaeus) (*63) Blackmoorfoot (SE01) 27/7/85; MLD.

Strongylogaster macula (Klug) (*65) Cautley Spout, 30/5/79; HEF. (63) Wharmcliffe Wood (SK3095), 27/5/87; JDC.

+*S. xanthocera* (Stephens) (63) Howell Wood (SE4309), JDC.

- +*Dolerus megapterus* Cameron (63) Wilthorpe Marsh (SE3308), 29/4/88; JDC.
- D. triplicatus* Klug (*63) Langold Holt (SK567857), 21/5/88; JHF.
- Heterarthrus aceris* (Kaltenbach) (*61) Burton Constable (TA1837), leaf mines in sycamore, 23/7/88; WAE.
- H. microcephalus* (Klug) (*62) Ravenscar (NZ9701), leaf mine on *Salix*, 9/9/89; WAE.
- Athalia circularis* (Klug) (*61) Thorpe Hall, Rudston (TA1067), 15/7/89; WAE.
- Empria candida* (Fallen) (*63) Wombwell Ings (SE4203), 12/4/92; JDC.
- E. immersa* (Klug) (*63) Wharnccliffe Wood, 12/5/88; JDC.
- +*E. parvula* (Konov) (*61) Towthorpe (SE9063), 26/5/90; WAE.
- Ametastegia albipes* (Thomson) (*63) Wharnccliffe Wood, 13/8/87; JDC.
- Protoemphytus carpini* (Hartig) (*61) Towthorpe, 26/5/90; WAE and JAN.
- Allantus togatus* (Panzer) (63) Howell Wood, Barnsley, 13/7/87; JDC. Third Yorkshire Record.
- Stethostomus funereus* (Klug) (*63) Tingle Bridge (SE3901), 18/5/92; JDC.
- Phymatocera aterrima* (Klug) (*61) Drifffield (SE023585), 5/91; E. Chicken (det. JHF). Larval attack on Solomon's Seal (*Polygonatum multi-florum*) also seen in previous years.
- Halidamia affinis* (Fallen) (*61) Towthorpe, WAE and JAN. (63) Pot Riding Wood (SE8963) 2/5/89; WAE.
- Metallus gei* Brischke (*63) Pot Riding Wood, 26/9/89; WAE. Leaf mines in Wood Avens (*Geum urbanum*).
- Scolioneura betuleti* (Klug) (*62) Ravenscar (NZ9701), mines in birch leaves, 9/9/89. (*63) Cawthorne (SE2709), 2/7/88; WAE.
- Messa nana* (Klug) (*61) Allerthorpe Common (SE74), leaf mines in birch, 5/8/89; WAE. (*63) Hoyland Bank (SE2710), 3/6/90; JDC. (*64) Ellington Banks (SE2773) leafmines in birch, 2/9/89; WAE.
- Profenusa pygmaea* (Klug) (*61) Allerthorpe Common (SE74), leaf mines on oak, 5/8/89; WAE. (*64) Ellington Banks (SE2773), leaf mines on oak; WAE.
- Ryhogogaster genistae* (Bens.) (63) Carlton Marsh (SE3709), a number on broom, 22/5/92; JDC. Also Cudworth Common (SE4006), 3/6/89; JDC.
- R. chlorosoma* Benson (*63) Manvers SE4501), 9/6/92; JDC.
- +*Macrophya albomaculata* Costa (62) Chafer Wood, Ebberston (SE9083), 28/5/88; JHF.
- M. blanda* (Fabricius) (*64) Burton Leonard nature reserve, 14/7/90; JHF. The only other record in Yorkshire was reported from Wakefield in the Victoria County History.
- M. puncumalbum* (Linnaeus) (*63) Chesterfield Canal (SK58), 31/5/81; WAE. Hugsett Wood (SE3007), 7/86; JDC.
- Priophorus ulmi* (Linnaeus) (*61) Humber Banks (TA2122), 7/6/80; WAE.
- Hoplocampa chrysorrhoea* (Klug) (*63) Wilthorpe Marsh (SE3308), 4/88; JDC. The second Yorkshire record.
- Stauronematus compressicornis* (Fabricius) (63) Manvers (SE4501), 14/7/92; JDC. Only one other in Yorkshire.
- +*Pristiphora bifida* Hellén (63) Gypsy Marsh (SE4102), 11/7/91; JDC.
- +*Pristiphora conjugata* (Dahlbom) (63) Manvers (SE4501), 18/6/92; JDC.
- +*P. monognyiae* (Hartig) (63) Carlton Marsh, Barnsley (SE3709), 30/4/92; JDC.
- P. ruficornis* (Olivier) (*63) Cortonwood (SE4001), 23/8/89; JDC.
- Nematinus acuminatus* (Thomson) (*63) Howell Wood (SE4309), 17/6/90; JDC.
- Croesus latipes* (Villaret) (*63) Howell Wood (SE4309), 15/8/92; JDC.
- Nematus coeruleocarpus* Hartig (*63) Manvers (SE4501), 28/5/92; JDC.
- Pachynematus albipennis* (Hartig) (63) Manvers, 23/8/92; JDC. The only other Yorkshire record is in the Victoria County History.
- +*P. rumicis* (Linnaeus) (63) Sowell Pond (SK3399), 14/6/89; JDC. (64) Wyke, Leeds, 8/6/92; HEF det. JHF.

The following sawflies, of more general and frequent occurrence, are recorded for the first time in the vice-counties indicated below.

VC61: *Fenusa ulmi* Sundewall, Burton Constable; *Nematus oligospilus* Foerster, Rudston; *Birka cinereipes* Fabricius.

VC63. *Protoemphytus pallipes* (Spinola), Winscar Reservoir; *Caliroa cerasi* (Linnaeus), Manvers; *Claremontia tenuicornis* (Klug), Tingle Bridge; *Nematinus abdominalis* (Panzer), Little Don Valley; *Amauronematus histrio* Lepeletier, Wilthorpe Marsh; *Platycampus luridiventris* Fallen, Low Barugh canal; *Phyllocolpa leucosticta* Hartig, Hoyland Bank; *Nematus viridescens* Cameron, Corton Wood.

VC65. *Empria liturata* (Gmelin), Condenser Wood; *E. tridens* Konov, Condenser Wood; *Cladius difformis* (Panzer), Gillfield Wood.

BOOK REVIEW

British Plant Communities. Volume 3, Grasslands and Montane Communities edited by J. S. Rodwell. Pp. 540, 36 figures, plus distribution maps. Cambridge University Press, 1992. £95.00 hardback.

This is the third of five volumes on British plant communities produced as part of the National Vegetation Classification. The classification and descriptions of the communities is based on about 35000 relevés compiled by many workers, including those of McVean and Ratcliffe, Shimwell and staff of the former Nature Conservancy Council. The classification of the communities was carried out using a number of multivariate techniques, but eventually employing the Two-way Indicator Species Analysis devised by Mark Hill.

There is a general introduction to the scope, methods, data analysis and style of presentation followed by three main sections which have the following groupings of plant communities: mesotrophic grasslands, calcicolous grasslands and calcifugous grasslands and montane communities. The use of these three groupings is an unfortunate necessity in order to separate the large number of plant communities into easily handleable parts for a book. Some will despair at the arbitrary boundaries set between various mire communities and a mesotrophic grassland, or saltmarsh communities covered in a forthcoming volume and various grasslands. The rather diverse range of communities included in the 'upland communities' grouping (e.g. *Festuca-Agrostis* grasslands, *Carex bigelowii-Racomitrium* heath and *Luzula sylvatica-Geum rivale* tall-herb community) illustrates this unfortunate point.

Each section covers the broad geographical/ecological relationship between the various communities and a key is provided in order that stands may be classified by readers as far as possible. Anyone trying to use these keys should remember that they must select homogeneous stands of vegetation and that not all British plant communities have been described in these volumes or that all transitional communities have been included.

This volume describes 13 mesotrophic grasslands, 14 calcicolous grasslands and 21 upland communities. All communities have a list of synonyms and constant species and a description of their physiognomy, habitat, zonation and succession, distribution, affinities and a floristic table. There is usually a list of rare species and a distribution map of the communities in Britain based on 10km grid squares. Most of the communities described make more sense than the mire communities and this book will be of particular interest to northern naturalists interested in reading the account of *Sesleria albicans* grasslands that are confined to our area. I found reading the accounts rather heavy going, but these volumes will become a standard description of British vegetation and are unlikely to be replaced by a more detailed or comprehensive description before well into the next century.

ADH

BOTANICAL REPORTS FOR 1992 FLOWERING PLANTS AND FERNS

Compiled by J. E. DUNCAN

The recorders thank all those who have sent in records. The names of contributors are given in full the first time they appear in each report, initials being used thereafter.

Nomenclature of species is according to Dandy, J. E. (1958) with some amendments. Since the publication of Dandy's *List* there have been many nomenclatural changes which are shown in the recently published works; from 1993 onwards, the names in the report will be in accordance with those used in Stace, Clive A. (1991) *New Flora of the British Isles*. CUP and Kent, D. H. (1992) *List of Vascular Plants of the British Isles*. BSBI.

EAST YORKSHIRE (VC61) (F. E. Crackles)

Azolla filiculoides Lam. Garden pond, Beverley 54/04; P. Murby.

Ranunculus lingua L. Gravel pit, Burnby 44/84, 1991; M. & J. Stringer.

Lepidium heterophyllum Benth. Dumping ground, Heigholme Lane, Leven 54/04, 1991; J. Dews, conf. D. Steeden, and Brandesburton 54/04, 1991; J.D., conf. T. Rich.

L. latifolium L. By Barmston Drain, Hull 54/03, 1992; J.D.

Coronopus didymus (L.) Sm. Keyingham 54/22; A. Braithwaite.

Cochlearia danica L. Bampton cliff 54/27 and cliff near Filey Brigg 54/18; A. Marshall.

Sisymbrium altissimum L. Withernsea 54/32; P. Cook.

Viola canina L. subsp. *canina* South Cliffe Common 44/83, 1988; M. Wigginton.

Stellaria nemorum L. Cliff Wood by R. Derwent, near Skirpenbeck 44/75, 1991; J. Lambert.

S. palustris Retz. South Cliffe Common 44/83, 1988; M.W.

Euonymus europaeus L. Howsham Wood 44/76, 1991; A. Weston.

Genista tinctoria L. Disused railway, between Foggathorpe and Bubwith 44/73; J. Killingbeck.

Lotus tenuis Waldst. & Kit. ex Willd. Keyingham 54/22; A.B.

Rubus polyanthemus Lindeb. Thornton Ellers 44/74; R. Smith.

Epilobium montanum L. x *E. ciliatum* Raf. East Hull 54/13; F. E. Crackles.

Viscum album L. on *Juglans nigra* in Hessle Cemetery 54/02, 1991; J.K.

Apium inundatum (L.) Reichb. f. South Cliffe Common 44/83, 1988; M.W.

Heracleum mantegazzianum Somm. & Levier Howsham Wood 44/76, 1991; A.W.

Gentiana pneumonanthe L. Re-found on Allerthorpe Common 44/74, 1988; H. Stace.

Myosotis sylvatica Hoffm. Howsham Wood 44/76, 1991; A.W.

Pinguicula vulgaris L. South of Millington 44/85, 1991; M.S. & J.S.

Adoxa moschatellina L. Cliff Wood by R. Derwent, near Skirpenbeck 44/75, 1991; J.L.

Conyza canadensis (L.) Cronq. Potter Brompton 44/97, 1991; A. J. Wallis and North Duffield Carrs 44/64, 1991; T. E. Dixon.

Platanthera chlorantha (Custer) Reichb. One plant, Howsham Wood 44/76, 1991, confirming a very old record; A.W.

Melica uniflora Retz. Haltemprice Lane, Hull 54/03, confirming a record in Robinson's 'Flora'; W. Armstrong.

Agrostis canina L. South Cliffe Common 44/83, 1988; M.W.

NORTH-EAST YORKSHIRE (VC62) (T. F. Medd)

Viola canina L. Strensall Common SE(44)/65; T. F. Medd.

- Hypericum elodes* L. Strensall Common SE(44)/65; T.F.M.
Rubus lindleianus Lees Whisperdales SE(44)/99; YNU Bot. Sec. Excn. det D. Grant.
R. ulmifolius Schott Wrench Green SE(44)/98; YNU Bot. Sec. Excn. det D.G.
R. vestitus Weihe Reasty Bank SE(44)/99; YNU Bot. Sec. Excn. det D.G.
R. dasphyllus (Rogers) E. Marshall Wrench Green SE(44)/98; YNU Bot. Sec. Excn. det D.G.
R. eboracensis W. C. R. Wats. Hovingham SE(44)/67; YNU Excn. Whisperdales SE(44)/99; YNU Bot. Sec. Excn. both det D.G.
Potentilla palustris (L.) Scop. Masses in flower on Pilmoor Common SE(44)/47; T.F.M.
Ribes spicatum Robson Mill Wood, Scargill NZ(45)/01; Mrs M. Sykes.
Berula erecta (Huds.) Coville Hovingham SE(44)/67; YNU Excn.
Scrophularia auriculata L. Hovingham SE(44)/67; YNU Excn.
Veronica scutellata L. Strensall Common SE(44)/65; T.F.M.
Gnaphalium sylvaticum L. Hovingham SE(44)/67; YNU Excn.
Baldellia ranunculoides (L.) Parl. Strensall Common SE(44)/65; T.F.M.
Listera ovata (L.) R.Br. Whisperdales SE(44)/99; YNU Bot. Sec. Excn.
Scirpus sylvaticus L. River Rye, Helmsley SE(44)/68; L. Magee.
Carex strigosa Huds. Forge Valley SE(44)/98; C. Wilson.
Vulpia myuros (L.) C. C. Gmel. York SE(44) 65; York & DFN Soc.
Calamagrostis epigejos (L.) Roth Hovingham SE(44)/67; YNU Excn.

SOUTH YORKSHIRE (VC63) (D. R. Grant)

- Polystichum aculeatum* (L.) Roth Middle Dean Wood, Crimsworth Dean SD/9943; F. Murgatroyd.
Ophioglossum vulgatum L. Wadworth Wood, Wadworth SK/5797; D. Bramley.
Erophila verna (L.) Chevall. Calder Grove near Wakefield SE/3017; YNU Bot. Sec. Excn.
Myosoton aquaticum (L.) Moench North Ings, Hartlington SE/4801; D. R. Grant and Willow Garth, Knottingley SE/5124; T. Schofield.
Malva moschata L. Earlsheaton near Dewsbury SE/2521; D.R.G.
Genista tinctoria L. Rumtickle, Thurgoland SE/2800; E. Thompson.
Rubi determined by A. Newton:
Rubus scissus W. C. R. Wats. Higher Greenwood Wood near Hebden Bridge SD/9730; T. S. and railway embankment, Mytholmroyd SE/0125; D.R.G.
R. lindleianus Lees Great Heck SE/5921; T.S.
R. ulmifolius Schott Kirk Smeaton SE/5117; T.S.
R. tuberculatus Bab. Mirfield SE/1820; E.T. and Horbury SE/3117; YNU Bot. Sec. Excn.
R. caesius L. Near Glusburn SD/9844; D.R.G. and Wadworth Wood, Wadworth SK/5797; D.B.
Sorbus torminalis (L.) Crantz. Haw Parks Woods, Winterset, Wakefield SE/3614; YNU Excn.
Oenanthe crocata L. Hoyle Mill Country Park near Barnsley SE/3606; E.T.
Euphorbia lathyris L. Near railway station, South Elmsall SE/4711; D. Proctor.
Polygonum bistorta L. Clayton near Doncaster SE/4508; E.T.
Ballota nigra L. Knottingley SE/5123; T.S.
Pedicularis palustris L. Salt Springs near Bolsterstone SK/2497; Dr Lloyd Evans.
Melampyrum pratense L. Near Bolsterstone SK/2597; L.I.E.
Galium mollugo L. Elland Gravel Pits SE/1222; F.M.
Hieracium umbellatum L. Wentbridge SE/4718; T.S.
Picris echioides L. Near Northorpe SE/2221; F.M.

Potamogeton trichoides Cham. & Schledt. Bradley near Huddersfield SE/1619; J. Lucas.
P. epiphydrus Raf. Canal, Brearley SE/0226; P. Abbott.
P. berchtoldii Fieb. North Ings, Harlington SE/4801; D.R.G.
P. pectinatus L. Canal, Bradley near Huddersfield SE/1619; J.L.
Zannichellia palustris L. North Ings, Harlington SE/4801; E.T.
Eleocharis acicularis (L.) Roem. & Schult. conf. C.D. Preston, Canal, Mytholmroyd SE/0125; P.A.
Cyperus longus L. Gawthorpe, Ossett SE/2721; D.R.G.
Carex caryophyllaea Latourr. Salt Springs, Bolsterstone SK/2497; L.I.E.
C. laevigata Sm. Salt Springs, Bolsterstone SK/2497; L.I.E.
Poa compressa L. Hoyle Mill Country Park near Barnsley SE/3606; D.R.G.
Vulpia myuros (L.) C.C. Gmel. Old railway, Shaftholme SE/5709; D.R.G.

MID-WEST YORKSHIRE (VC64) (L. Magee)

A large number of records have been received from many parts of the Vice-County. They include new Yorkshire records, records of rare or endangered species, many new 10km square records and extensions of range. The Fresh Water Biological Section Field meetings continue to add to our knowledge of aquatic species.

Only a short selection of records are included in the following list.

* = New 10km square records.

**Polypodium interjectum* Shivas Scotton Banks SE/3357; D. J. Tennant confirmed R. H. Roberts.

**Polypodium interjectum* Shivas. Near Beazley Falls, Ingleton SD/7074; D.J.T. Confirmed R. H. Roberts. Hackfall Woods SE/2377; D.J.T. and J. S. Tennant. Confirmed R. H. Roberts.

Polypodium x mantoniae Rothm. and U. Schneider. Hackfall Woods SE2377; D.J.T. and J.S.T. Det. R. H. Roberts. First recent Yorkshire record.

Ranunculus trichophyllus Chaix. sub. sp. *drouetii* Pond at Barden SE0656; L. Magee.

Ranunculus penicillatus (Dumort.) Bab. River Wharfe, Burley SE/1747; FWBS field meeting.

Thalictrum flavum L. Sherburn Willows, YNT Reserve, SE/5124; D.G.

Ceratophyllum demersum L. Pond at Sherburn-in-Elmet SE/4834; L.M.

Corydalis claviculata (L.) DC. Beamsley Estate SE/0830; L.M. Brayton SE5830; D.G.

Cardamine impatiens L. Car park, Buckden SD/9497; J.D. (There is an old record for Buckden Gill.)

Hypericum montanum L. Lotherton SE/4536; D.G.

Geranium sylvaticum L. Old railway tunnel, Upper Nidderdale SE/0976; D.G.

Rubus caesius L. Old railway tunnel, Upper Nidderdale SE/099766; D.G. Det. A. Newton. Flasby SD/9457; D.G.

Rubus eboracensis W. C. R. Watts. Flasby SD/9457; D.G.

Crataegus laevigata (Poiret) DC. Sherburn Willows. SE4832; D.G.

Crassula hemsii (Kirk) Cockayne. Marton SE/4162; P. Abbott. Wistow SE/5935; J. Payne per PA.

**Ribes alpinum* L. Eaves Hall Lane, Near Clitheroe SD/740445; D.G.

Myriophyllum spicatum L. River Wharfe, Harewood SE3446; L. M. Boston Spa, SE/4245; L.M. Extending range downstream.

Parietaria diffusa Mert and Koch. Walls of Healaugh Church, near Tadcaster SE/4948; E. Thompson. Ledsham village SE/4529; D.G.

Hottonia palustris L. Pond at Arkendale SE/3861; D.J.T. and J.S.T.

Myosotis stolonifera (DC) Beamsley Moor SE/0830; L.M.

- **Scrophularia umbrosa* Dumort. Scale Mill Dams SD9061; FWBS field meeting.
- **Orobancha reticulata* Wallr. 'Mid-West Yorkshire', (locality on record); D. Smith per P.A.
- **Orobancha reticulata* Wallr. 'North Yorkshire', (locality on record); M. Foley and P.A.
- **Stachys arvensis* (L.) L. Arkendale SE/3961; D.J.T.
- **Campanula glomerata* L. Appleton Roebuck SE/5642; D.G.
- **Leonurus cardiaca* L. Bolton Abbey SE/073557; YNU field meeting.
- Asperula cynanchica* L. Ledsham SE/4630; D.G.
- Bidens cernua* L. Old oxbow of River Aire, Apperley Bridge SE/1938; FWBS field meeting.
- Bidens tripartita* L. Old oxbow of River Aire SE/1938; FWBS field meeting.
- **Baldellia ranunculoides* (L.) Parl. Estimated 200 plants in a pond at Beamsley SE/0825; L.M.
- Potamogeton x cooperi* (Fyrrer.) Fryer. River Wharfe, Weeton SE/2846; L.M. River Wharfe, Burley SE/1747; A. Norris, FWBS field meeting. Det. L.M. Confirmation of old record.
- **Potamogeton obtusifolia* Merk and Koch. Burley Mill Goits SE/1747; FWBS field meeting. Confirmed D.G.
- Potamogeton trichoides* Cham and Schlecht. Kirkstall Canal Staithe SE286343; FWBS field meeting per L.M. Confirmed D. G.
- Potamogeton x suecicus* K. Richt. River Wharfe, Flint Mills SE/4247; L.M. Extension of range downstream.
- Groenlandia densa* (L.) Fourr. Staveley near Knaresborough SE/3663; D.J.T.
- **Zannichellia palustris* L. Fewston Reservoir, near Dam. SE/1854; L.M.
- **Gymnadenia conopsea x Dactylorhiza fuchsii* = *D x st-quintinii* (Dogfery) J. Duvign. 'Wharfedale' (Locality on record); J.D. Confirmed at Kew.
- Pseudorchis albida* (L.) A. C. D. Löve. Near Kettlewell SD/9672; L.M.
- **Dactylorhiza fuchsii* (Druce.) Soó var *rhodochila* D. M. T. Ettlinger. Near Harrogate SE/1958; J. Barker. Det. D.J.T. (var *Nov.* validated in *Watsonia* 18 307-309 (1991), First Yorkshire record.
- **Dactylorhiza incarnata* (L.) Soó Farnham SE/3460; R. M. Sanderson. det D.J.T. 'With suspicion of being introduced in this locality'.
- **Dactylorhiza purpurella* (T. and T. A. Stephenson.) Soó Farnham SE/3460; R.M.S. 'With suspicion of being introduced in this locality'.
- Anacamptis pyramidalis* (L.) Rich. Roadside, Lotherton SE/4536; D.G.
- Festuca arundinacea* Schreb. Lotherton SE/4436; D.G.
- **Apera spicaventi* (L.) Beauv. Thrope Willoughby SE/5831; D.G.

NORTH-WEST YORKSHIRE (VC65) (T. F. Medd)

Ranunculus penicillatus (Dumort.) Bab. River Cover, Ullshaw Bridge SE(44)/18; YNU Excn. det L. Magee.

CASUALS AND ADVENTIVES (E. Chicken)

Since the 1991 report, 74 records have been received from 13 recorders for 58 taxa. As usual the majority are of plants growing in fields in the Wakefield area to which shoddy is applied. Many of these appear year after year, but *Abutilon theophrasti* is entered in the Y.N.U. card index for the first time. Another 'first' not associated with wool aliens is *Leonurus cardiaca*. Such finds surely form part of the fascination of field botany.

All records sent in are entered in the card indexes, even though only a selection are given here. The contributor is assumed to be the determiner unless otherwise stated.

- Diplotaxis erucoides* (L.) D.C. (63) Brandy Carr Farm, Kirkhamgate, Wakefield SE/3023; Mrs P. P. Abbott per J. Martin 1991.
- Cardamine impatiens* L. (64) Buckden car park SD/9477; Mrs J. E. Duncan.
- Abutilon theophrasit* Medicus (63) Whitehall Farm, Wakefield SE/3123; J.M. det. E.J. Clement 1991.
- Spiraea x rosalba* Dippel (62) Sand Hutton SE/6858; E. Chicken.
- Rubus procerus* P. J. Muell. (63) Town Close Hills, Great Preston SE/4030; Pildacre Hill, Ossett SE/2620; Horbury Junction SE/3017; all D. R. Grant.
- Rosa rugosa* Thunb. (61) Hedge at Southburn SE/9954; E.C. (63) Bank of River Calder, Horbury SE/2917; and roadside, Harden SE/0838; D.R.G.
- Sedum hybridum* L. (63) Disused quarry, Levitt Hagg, Sprotborough SE/5300; C. A. Howes det. E.C.
- Crassula helmsii* (T. Kirk) Cockayne (64) Pond at Marton SE/4162; P.P.A. and pond at The Nesses, Wistow SE/6036; K. G. Payne per P.P.A.
- Tolmiea menziesii* (Pursh) Torr. & Gray (63) Woodland pathside, Huddersfield SE/1709; Mrs J. Lucas.
- Physalis ixocarpa* Brot. ex Hornem. (63) Brandy Carr Farm, Kirkhamgate SE/3023; J.M. conf. E.J.C. 1991
- Solanum sisymbriifolium* Lam. (63) Garden at Doncaster SE/6408; G. Miller det. M. J. Warrington 1990.
- Digitalis ferruginia* L. (63) Disused quarry, Levitt Hagg, Sprotborough SE/5300; A. Needham per C.A.H. det. E.C.
- Mentha x villosa* var. *alopecuroides* (Hull) Briq. (63) Waste ground, Huddersfield SE/1709; J.L.
- Leonurus cardiaca* L. (64) Bolton Abbey Woods SE/0755; YNU Excursion per D.R.G.
- Senecio inaequidens* D.C. (63) Birkland Street, Bradford SE/1732; D. H. Lightowler, det. E.C. initially as *S. laetus* A. Richard but advised of the preferred name of the European adventive by D. Kent. 1991.
- Polygonatum x hybridum* Brügger (63) Wooded streamside, Huddersfield SE/1709; J.L.
- Lilium martagon* L. (62) Roadside verge, Barmoor Lane near Scarborough SE/9992; Mrs G. Wadsworth per Mrs M. Robinson.
- Bromus inermis* Leyss. (63) Bank of River Calder SE/2917; D.R.G.

RICHARD SPRUCE CONFERENCE, YORK

20-22 September 1993

The Linnean Society will be hosting a Commemorative Conference on Richard Spruce (1817-1893), Yorkshire botanist and explorer, on the above dates at the University of York.

A varied and interesting programme of lectures and exhibits has been arranged, including a public lecture by Professor G. T. Prance (Kew) and a reception at York Museum, a remembrance service at Terrington where Spruce is buried, visits to Spruce's home at Conyesthorpe and to Castle Howard, and a conference dinner.

Accommodation and meals have been arranged at the University of York for the period 19-22 September. Early registration is advised. The normal registration fee is £30.00, but for YNU members this will be £20.00; the student fee is £10.00.

Those wishing to participate (including presentation of paper, poster or exhibit) should apply for a registration form as soon as possible by contacting:

Prof. M. R. D. Seaward,
Dept. of Environmental Science,
University of Bradford,
Bradford BD7 1DP (Tel: 0274-384212, Fax: 0274-384231)

BOOK REVIEWS

Insects on Cabbages and Oilseed Rape by **W. D. J. Kirk** Pp. 66 with numerous b/w drawings & 4 coloured plates. **Naturalists Handbooks 18** Richmond Publishing Co. £13.00 hardback, £7.95 paperback.

This publication is mainly about those insects that are commonly found feeding on cabbages and oilseed rape in the U.K. with keys for their identification. The introductory chapter examines the plants, dealing with their taxonomy, history of cultivation and the chemistry of glucosinolates. The glucosinolates are sulphur-containing compounds that make the plants unpalatable and toxic to vertebrates, insects and slugs and also inhibit the growth of bacterial and fungal diseases. As such, the insects feeding on the brassicas must be specialists able to detoxify the glucosinolates. In fact, these insect specialists when adult use the volatile break-down products of glucosinolates to locate the plants at a distance and as a sign-stimulus to release egg laying and feeding behaviours. The community of insect herbivores is considered next, with reference to ecological principles. The economic importance of insects both as pests and pollinators is reviewed and cultural methods of pest control such as inter-cropping are discussed. The keys, printed on 32 pages, take up about half of the book and are well illustrated with numerous line drawings. The common species are identified to species or genus level, the common casuals to families and the passers-by or tourists to higher categories. Finally, techniques on trapping, preserving and breeding insects are given, with useful addresses, references and further reading. This is an excellent publication.

MEA

Scarce and Threatened Coleoptera of Great Britain by **P. S. Hyman** (Revised and Updated by **M. S. Parsons**). Pp. 484. Joint Nature Conservation Committee, Peterborough PE1 1JY. £18.00 + £3.00 postage and backing.

Few works can present the reviewer of our coleoptera literature with so daunting a task as does this particular volume.

As such, factual content has been taken for granted (hardly surprising considering the calibre of contributors to this excellent work and the obviously painstaking labour undertaken in its compilation and layout), but perhaps some criticism of layout and design can be proffered.

Firstly, the front cover is positively awful, being gaudily coloured with a design that in no way relates to the contents. Furthermore, being of fairly thin card and considering the use such a work will undoubtedly be subjected to, its serviceability must be questioned. Whilst hardback would significantly increase the price of the book, perhaps linen-back would have been a useful compromise.

As to the work itself: a lengthy introduction to layout, information sources and collation methods etc. is followed by appendices covering: (1) Revised statuses of water beetles; (2) Statuses of all species in the work itself listed categorically: extinct, RDB1, RDB2, etc.; (3) A taxonomic listing of Red Data Book and notable species in the book.

The main body of the work (pp.61-421) follows, and comprises an individual account of each species, giving *Distribution, Habitat and Ecology, Status and threats, Management and conservation* under separate sub-headings whilst presenting the relevant information in a clear and concise manner. Species, genera and families are all listed alphabetically. Alphabetic listing, particularly of families, is perhaps questionable – Coleopterists are likely to be the main users/purchasers of this work and their familiarity with Kloet and Hinks (1977) may result in some confusion at finding families such as Geotrupidae geographically isolated from Scarabaeidae etc. Perhaps superfamily groupings should have been maintained.

The work concludes with a superb Bibliography as well as cross-referenced index to

genera and species. An index to scientific plant names used throughout is also given.

The disconcerting thing about this work, however, is its size – in so much as it clearly indicates how our native coleopteran fauna has declined and is apparently continuing to do so. Considering that this is Part 1, one has to wonder how large future editions are likely to become.

All in all, a superb long-awaited publication that no coleopterist should be without. It will undoubtedly take its place as a keystone of our contemporary literature.

RBA

Hawaiian Insects and their Kin by **F. G. Howarth** and **W. P. Mull**. Pp.160, with full colour plates throughout. University of Hawaii Press. 1992. \$19.95 hardback.

This book is divided into two parts, with the first 59 pages being divided among seven text chapters dealing with the special features of the Hawaiian Islands, the history of Hawaiian entomology, the origin of the Hawaiian insect fauna, evolution in Hawaiian insects, conservation, insects as an educational resource and the native Hawaiian land arthropods. Each of these chapters is interspersed with full and half plate colour plates. Most of the remainder of the book is devoted to colour plates with informative captions. There is a good bibliography and an index of scientific names.

As noted in the introduction, the insect fauna in Hawaii is among the most unique on earth. Because of the extreme isolation of the Hawaiian Archipelago in the northern mid-Pacific Ocean, only those arthropods capable of long distance dispersal have succeeded in colonization. Thus the number of insect orders endemic to Hawaii is severely truncated. However, once established, speciation, with the evolution of many unique species swarms, has been rife. Among the Orthoptera and Diptera, the Hawaiian endemics provide an unsurpassed tool for the study of evolutionary processes.

The wealth of information the authors have been able to include within the text chapters is formidable and each is lucidly written. Where necessary, textual information is fully supported by graphs, maps and tables. All of the colour photographs are of superb quality and have been selected with discrimination. The quality of the paper and printing is very good.

This book will appeal to both the specialist and those only casually interested in arthropods. At a price of about \$20 US this book must be one of the better bargains available today.

RL

Wildlife Research and Management in the National Parks by **R. Gerald Wright**. Pp. viii + 224, with 8 pages of monochrome photographs, and various maps, diagrams and tables. University of Illinois Press, 1992. \$32.50 hardback.

This book covers the history of management decisions in the National Parks of North America. The title suggests an emphasis on research, but the text is orientated more towards the management practices, and the research that supports or contra-indicates them. Once this has been recognised, the usefulness of the book becomes apparent.

The book appears to be intended for the American market: there is much assumed of the reader in that there is no map of the locations of the parks mentioned in the text. Further, there is no general introduction to the American wildlife conservation system, describing the different roles of Parks and other protected areas, or the hierarchy and respective roles of the bodies involved. To some extent, however, this is revealed if the book is read carefully.

To the academic reader, the book offers an insight into the frustrating life of biologists employed by the National Parks Service. It does not, despite expectations, list or outline the extent of research activities in the Parks, neglecting particularly pure or applied research by non-Park scientists from Universities. It is possible to find one's way into a bibliography of

Park-related publications through the text and reference list, but the book itself would surely be the best place to draw this information together. How many biologists work in the Parks, and how many are employed there? What methods have been used for base-line survey? What long-term studies are under way? Which sites have exclosures and manipulation experiments? Some of this information, interesting for comparisons with other countries, is present but fragmented through the book.

These criticisms aside, the great strength of the book for the conservationist in America or Britain is the clarity with which the problems of conducting and applying research in protected areas is expounded. To the British reader, the parallels between the two countries are fascinating and sobering. American conservation too, it seems, is plagued by traditional methods and other management dogmas. America too has a division between practitioners and researchers, with lack of communication between the two being a cause (or result!) of their different philosophies. The familiar arguments about judicious neglect or intervention, the aims of sites and the management of visitors reveal the similarity of the personalities involved in these two very different lands.

The dominance of a few taxa in the book reflects the dominance these animals have in the psyche of the American people and Park managers. The mammals, particularly the large ones such as bears, elk and wolves, receive disproportionate attention comparable to the British managers' obsession with butterflies and flowers. I would have hoped a book of this sort would at least mention the research on other groups, particularly invertebrates and plants, but this is hinted at only indirectly under calls for inventory surveys.

The book is very clearly written, despite a lack of overall structure. Each chapter ends with helpful footnotes, and the detail and references are welcome. The conclusion is stronger than the introduction, and worth getting to, although much of the body of the book is of value for reference rather than a light read. It is worth scanning each chapter, since many interesting gems of information of value for teaching and research are tucked inside.

In sum, the book is a valuable way to put American (and British) conservation in perspective, and the average conservationist can learn a lot from it.

CH

Classification, Evolution, and the Nature of Biology by Alec L. Panchen. Pp. xi + 403 with diagrams. Cambridge University Press, 1992. £45.00 hardback, £16.95 paperback.

It is ironic that taxonomy has been virtually eradicated from British universities over the past few decades, and, as Panchen writes in the Postscript to his book, '[u]ndemanding entertainment is to be given precedence over scholarship' in the Natural History Museum in London which is [should one now say 'has been'?] one of the greatest institutions for taxonomic research in the world. The irony is that learned biological societies have been asked [consequent on the Darwin Initiative announced by the Prime Minister at Rio in 1992] to provide 'ideas for areas of research and development in systematic biology', to the Office of Science and Technology, 'towards which funding should be directed in the near future': *this* after the British Government's long-continued policy, in Panchen's words, of 'starving public institutions of funding', and of increasing pressure within starved university biology departments for staff to attract money. Systematic biology is not a moneyspinner, and the word 'development' in the document I quote ill-suits the subject of classification which, to paraphrase R. A. Crowson quoted by Panchen is *fundamental* to science itself: 'Before you can do either [counting or measuring] to any purpose you must first select what you propose to count or measure, which presupposes a classification'.

In his Introduction to *Classification, Evolution, and the Nature of Biology* Panchen makes the ('perhaps') analytic statement 'that the only way in which members of our species . . . can order their perceptions of the world and the ideas to which they give rise is to produce a classification'. He also credits other animals with the ability to classify, but not with the ability to articulate what they know. The uniqueness of biology in making 'taxonomic statements' flowing from hierarchical patterns of classification is made

manifest. The methodologies employed historically in the construction of such patterns, and their relationships to phylogeny and to evolutionary theories are treated in a number of chapters which demand a great deal of the reader, both in philosophical and biological cognition; a glossary of terms, which would have greatly helped this reviewer, is not included.

This book cannot be taken lightly; it is scholarly and clearly written and, as the jacket suggests, it is 'an important source book on methods of classification and the logic of evolutionary theory . . .'. But, in view of the matters raised in the first paragraph of this review, the suggested audience of 'students, professional biologists, and paleontologists' may be pathetically small.

DJH

Plants and Microclimate: a quantitative approach to environmental plant physiology by **Hamlyn G. Jones**. 2nd edition, 1992. Pp. 428, Cambridge University Press. £55.00 hardback, £19.95 paperback.

This book describes the physiological response of plants to the physical aerial environment in a quantitative manner with the help of numerous equations and diagrams. There is a comprehensive list of symbols and abbreviations at the beginning to help the reader through the text and figures. There are in total 12 chapters, dealing with radiation (mainly light), heat, plant water relations, energy balance, stomatal behaviour, photosynthesis, respiration, light and plant development, temperature, physiology and yield development. This second edition improves on the first; it is more consistent in the use of SI units and incorporates current interest in changing atmospheric carbon dioxide concentrations and consequent predictions of climate change.

Dr Jones has aimed this book at students of botany and related subjects studying plant physiology at an advanced undergraduate or postgraduate level. This book will provide them with a rigorous and quantitative approach to plant-environment studies. I would strongly recommend this book to those people interested in this field as the text and figures give a very clear explanation of the ideas presented.

ADH

An Illustrated Guide to Fungi on Wood in New Zealand by **I. A. Hood**. Pp. 424, plus 8pp colour plates. Distributed by Oxford University Press for the Auckland University Press. 1992. £19.50 paperback.

The first impression which strikes the reader on opening this book are the wide open spaces. However, once this has been put to one side it can be seen that it could be potentially useful to the mycologist and keen amateur in New Zealand, but alas not in the UK; only 35% of the species listed in Table 1 are British.

The author, after the formalities, offers an interesting short introduction covering the history, biology and ecology of fungi, with notes on wood decay, hosts and distribution and economic importance; also included are notes on edibility and classifying and naming fungi and a useful paragraph on how to use the book. An identification key covering 20 pages introduces the black and white figures which make up the major part of the book, the first 3 of which give general characters of a member of the Ascomycotina, Basidiomycotina and various wood rots. The rest of the figures cover 2 'Myxomycetes', 3 'Pyrenomycetes', 8 'Discomycetes' 2 Rusts, 6 Gasteromycetes – one Secotiaceous, 8 Jelly fungi, 99 Aphyllophorales (polypores and their allies) and 59 mushrooms and toadstools. The illustrations are economically and pleasantly executed with habitat sketches, sections and some microscopic characters, and in some cases higher plant parts to fill out the plate; a few species take up more than one figure; 48 colour photographs are bound into the centre of the book in 6 plates. The book finishes with a very useful bibliography of recent

(post 1900) references, full index and 3 very short appendices, the first on a classification system adopted, the second a new combination – a rather difficult place to find it, and a third on diagnostic tests and microscopic mounts.

The reviewer was pleased to see some of the more unusual and endemic New Zealand fungi illustrated, but it has limited use in this country. And that white paper!

RW

An Illustrated Guide to Herbs: their medicine and magic by Anna Kruger. Pp. 192. Dragon's World. 1992. £18.95.

The author eschews the usual botanical meaning of the word herb, that is a non-woody flowering plant, and does not refer to a definition at all in her glossary. She prefers what might be called the Culpepper connotation; there is a paragraph about him at the beginning of the book in which he is referred to as 'The People's Herbalist'. She has assembled some 200 species, woody and non-woody, and even slipped in a couple of seaweeds and a lichen. These are arranged in alphabetical order of common names and provided with a coloured illustration, a brief description, lists of medicinal properties real and imaginary, and culinary and other uses. The magic in the title we are told is 'green magic' and the instinctive feel for plants possessed by our ancestors who, as it were, lived with them and really knew them. In cases where it is possible to grow the plant in Britain, 'growing tips' may be added. There is also a section on cultivating and harvesting at the beginning of the book, as well as brief accounts of the history of herbalism and herbal medicine. The format is large (31cm x 25cm), and the illustrations are attractive, though often not detailed enough for accurate identification; for instance, it would not be possible with any certainty to distinguish the various umbellifers shown from one another. The miscellaneous scraps of folklore and other information will be of interest to the general reader.

FHB

The Complete Book of Plant Propagation by Graham Clarke and Alan Toogood. Pp. 256, including many line drawings, plus 32 pages of full colour plates. Ward Lock. 1992. £12.99 paperback.

Over the past decade, Alan Toogood's excellent earlier work, *Propagation* (1980), has proved an invaluable source of information. It is, however, superseded by this new collaborative and encyclopaedic work which promises to be even more useful. Clearly written and well illustrated with helpful line drawings, it covers just about every aspect of propagation that even the keenest plant raiser is likely to need information on.

In Part 1, a most interesting historical introduction is followed by a further 13 chapters on equipment, seed collection and sowing, the various techniques for raising plants from spores, from every possible type of cutting, by division, layering and from plantlets, and vegetatively from bulbs. Chapters 15 and 16 deal with the complexities of grafting and budding concisely but with admirable clarity. Chapter 17 covers the relatively new technique of micropropagation, and chapter 18 provides guidance on the training of plants.

Part 2 will undoubtedly prove a most valuable reference source. Separate alphabetic plant lists for hardy and tender ornamental and fruiting plants and vegetables, as well as culinary herbs, give specific advice on their individual propagation requirements: with about 1800 entries, the coverage is extremely comprehensive, including the major plants grown in northern Europe and the United States, besides a wide range of more unusual kinds.

The colour plates are attractive but not particularly informative and appear to have been chosen for their decorative value rather than to demonstrate any particularly unusual features of their propagation peculiarities.

VAH

The Common Toad by **Fred Slater**. Pp. 24, with 24 figures and colour illustrations. Shire Publications Limited, Princes Risborough. 1992. £1.95 paperback.

This excellent little booklet, number 60 in the Shire Natural History series, gives the reader an insight into all aspects of the Common Toad. Included is the distribution, diet, breeding habits, causes of mortality and some tips on conservation. Research data on the age structure of the population is illustrated and the dangers of rearing toads – being burnt at the stake! One criticism must be that the author fails to compare the toad to the Common Frog and there is no real help in identification for the total beginner.

TP

St Tiggywinkles Wildcare Handbook by **Les Stocker**. Pp. 208, with 14 black and white photographs and over 50 line drawings. Chatto & Windus. 1992. £9.99.

As field naturalists we frequently find or have referred to us injured creatures, be they road casualties, firearm victims or birds which have crashed into power cables or the now ubiquitous double glazing panels.

Despite its deceptively trivial title this compendium forms a comprehensive and highly practical handbook of first aid for wild birds, mammals, reptiles and amphibians. It includes sections on rescue and containment, assessment and treatment of injuries, and dealing with such environmental hazards as fishing line, oil, tar and various poisons. Handling techniques, feeding, housing, long-term care and returning to the wild are also covered.

There are useful appendices relating to specialist drugs and dressings, suppliers of equipment, legislation relating to the care of wildlife casualties, addresses of relevant organisations and institutions and a helpful bibliography.

CAH

List of Vascular Plants of the British Isles by **D. H. Kent**. Pp. xvi + 384. Botanical Society of the British Isles, London. 1992. £11.50 paperback. (Available from: BSBI Publications, 24 Glaphthorn Road, Oundle, Peterborough PE8 4JQ.)

This important work embraces the many nomenclatural and taxonomic changes which have occurred since the publication 35 years ago of J. E. Dandy's *List of British Vascular Plants*. The latter has provided countless botanists with a reasonably stable checklist upon which they could base their collections and publications. It is anticipated that this new reference work will serve botanists as well as its predecessor; however, its physical durability in paperback and the refusal of its pages to lie flat are greatly to be regretted.

MRDS

On Growth and Form by **D'Arcy Wentworth Thompson**. Pp.xxii + 346, with 181 line drawings. Cambridge University Press. 1992. £7.95 paperback.

D'Arcy Thompson's classic work needs no introduction to older biologists. Its availability again, albeit in abridged form, at such a reasonable price will inspire a new generation of students of biology and related subjects as it did countless others over the past decades. First published in 1917, the work ran to 793 pages; the enlarged edition of 1942 contained 1116 pages. Although this abridged edition based on the paperback published in 1966 occupies only 346 pages, it is enhanced by the addition of an excellent introduction and helpful footnotes provided by the editor, John Tyler Bonner. Not only is D'Arcy Thompson's book an important scientific text, it has the distinction of being a work of literature in its own right and therefore highly recommended to a wide readership.

MRDS

Lichens: an illustrated guide to the British and Irish species by Frank Dobson. Pp. 376 (b/w; plates & line drawings throughout) + 16pp. full colour plates. 1992. Richmond Publishing. £28.00 hardback, £20.00 paperback.

This is the third and very much enlarged edition of a guide which has proved invaluable to field naturalists for more than a decade. The recent publication of *The Lichen Flora of Great Britain and Ireland* (1992) by O. W. Purvis *et al.* in no way detracts from its usefulness, since this guide is much more accessible to the beginner who will, one hopes, be stimulated by its content to take on these fascinating plants as a more serious study. Frank Dobson has assembled a wealth of information, useful both in the field and laboratory: keys, monochrome and coloured plates, distribution maps and line drawings of critical characters for identification are provided for about 600 species (from a total British flora of some 1450 species). Although there are numerous typographical errors, particularly in running head titles, and a few plates poorly portray key features of particular species, this book is quite indispensable to those embarking on the study of lichens.

MRDS

Lakeland Rocks and Landscape: a Field Guide by The Cumberland Geological Society. Pp. x + 150, including 28 maps, 13 line diagrams and 11 b/w photographs. Ellenbank Press. 1992. £7.99.

This pocket sized volume provides a guide to 18 geological excursions in the Lake District and an excellent 11 page overview of the area's geology. Within the text, emboldened print indicates the technical terms which are explained in the 10 page glossary. This feature should be of great value to readers unfamiliar with geological jargon. The combination of a clearly written text, uncluttered, crisply presented maps and frequent reference to six-figure national grid references for those areas under consideration should ensure that the excursions can be readily followed by anyone who can read a map. Advice is given on car parking, convenient hostelrys, the severity of the walks and the length of time necessary to examine the sites.

The publication is an extensive revision of an earlier guide (1982) to geological excursions in the area. Over half the volume consists of new material, with several new excursions being described in the central and southern part of the Lake District.

Whilst considerable effort has gone into ensuring that the book can be read by non-geologists, a high standard of explanation and description is maintained throughout. As a consequence the work will provide valuable aid to field study groups, geologists both professional and amateur and to Lake District rambles who wish to acquire a better understanding of the physical attributes of the landscape.

DEC

Bryophytes and Lichens in a Changing Environment edited by Jeffrey W. Bates and Andrew M. Farmer. Pp. xii + 404, including numerous line drawings and tables. Clarendon Press, Oxford. 1992. £60.00 hardback.

This is a timely volume, for it has become apparent since the implementation of clean air policies that the ecology and distribution of many bryophytes and lichens have responded to a marked degree. These organisms are highly sensitive to environmental change, but until recently the dominating effect of air pollution, particularly in Britain, often masked other factors. This volume draws together some important aspects of this topic under such chapter headings as 'Controls on growth and productivity of bryophytes', 'Lichen reinvasion with declining air pollution', 'Changes in moss-dominated wetland ecosystems', 'The vanishing tropical rain forest as an environment for bryophytes and lichens' and 'Impact of agriculture on bryophytes and lichens'.

Although this work should be of considerable interest to a wide readership of those concerned with the environment, the high price will unfortunately put it out of the reach of many.

PUBLICATIONS FOR SALE

A Fungus Flora of Yorkshire. 1985. 296 pp. Hardback. £10.00 incl. p&p.

Butterflies and Moths of Yorkshire. 1989. 380 pp. Paperback. £17.50 incl. p&p. Unbound. £12.15 incl. p&p.

Mammals of Yorkshire. 1985. 256 pp. £7.50 incl. p&p.

Protection of Birds Committee Centenary Year, 1891-1991. 73 pp. £6.00 incl. p&p.

Moths and Butterflies of Spurn, 1991. 124 pp. £6 incl. p&p.

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